CLAIMS

WHAT IS CLAIMED IS:

1. A method for controlling start of a compression ignition engine without a cam sensor, the engine having a plurality of cylinders, each cylinder including a respective piston reciprocally movable between respective top and bottom positions along a cylinder longitudinal axis, the method comprising:

providing a respective fuel delivery assembly for each cylinder;

retrieving from memory a set of fuel delivery assembly firing rules;

processing the firing rules so that a firing signal is delivered to each fuel delivery assembly relative to an assumed cam position; and

monitoring at least one engine operational parameter so that if engine operational performance increases, then the assumed cam position is maintained, and in the event engine operational performance decreases, then the assumed cam position is changed by about 180 degrees.

2. The method of claim 1 wherein the firing signal is delivered on every other crank revolution relative to the assumed cam position.

3. The method of claim 2 further comprising reprocessing the firing rules every n engine revolutions so that the firing signal is delivered to each fuel delivery assembly relative to a cam position about 180 degrees relative to the assumed cam position, n corresponding to a positive integer.

4. The method of claim 1 further comprising, in the event of an unsuccessful engine start, arranging the firing signal to be delivered to each fuel delivery assembly relative to a cam position about 180 degrees relative to the assumed cam position.

5. The method of claim 4 wherein the engine operational parameter is selected from the group consisting of engine speed, acceleration, engine output power.

6. The method of claim 1 further comprising sensing an engine indication indicative of the probability of making a correct assumption for the cam position the first time a firing signal is delivered.

7. The method of claim 6 wherein the sensed engine indication comprises manifold pressure.

8. The method of claim 1 wherein the assumed cam position is based on an engine position sensed when the engine was last running.

9. A method for controlling start of a compression ignition engine without a cam sensor, the engine having a plurality of cylinders grouped in at least two sets of cylinders, each cylinder including a respective piston reciprocally movable between respective top and bottom positions along a cylinder longitudinal axis, the method comprising:

providing a respective fuel delivery assembly for each cylinder;

retrieving from memory a set of fuel delivery assembly firing rules;

processing the firing rules so that a firing signal is delivered to each fuel delivery assembly in one of the two sets of cylinders on every other crank revolution relative to an assumed cam position; and

processing the firing rules so that a signal is delivered to each fuel delivery assembly in the other of two sets of cylinders on every other crank revolution relative to a cam position about 180 degrees relative to the assumed cam position.

10. The method of claim 9 further comprising monitoring one or more engine operational parameters so that if engine operational performance increases, then the assumed cam position is maintained.

11. The method of claim 9 further comprising sensing one or more engine operational parameters so that if engine operational performance decreases, then the assumed cam position is changed by about 180 degrees.

12. A system for controlling start of a compression ignition engine without a cam sensor, the engine having a plurality of cylinders, each cylinder including a respective piston reciprocally movable between respective top and bottom positions along a cylinder longitudinal axis, the system comprising:

a respective fuel delivery assembly for each cylinder;

memory comprising a set of fuel delivery assembly firing rules;

a processor configured to process the firing rules so that a firing signal is delivered to each fuel delivery assembly relative to an assumed cam position; and

at least one sensor for monitoring at least one engine operational parameter so that if engine operational performance increases, then the assumed cam position is maintained, and in the event engine operational performance decreases, then the assumed cam position is changed by about 180 degrees.

13. The system of claim 12 wherein the firing signal is delivered on every other crank revolution relative to the assumed cam position.

14. The system of claim 13 wherein the processor is further configured to reprocess the firing rules every n engine revolutions so that the firing signal is delivered to each fuel delivery assembly relative to a cam position about 180 degrees relative to the assumed cam position, n corresponding to a positive integer.

15. The system of claim 12 wherein, in the event of an unsuccessful engine start, the processor is configured to cause the firing signal to be delivered to each fuel delivery assembly relative to a cam position about 180 degrees relative to the assumed cam position.

16. The system of claim 12 further comprising a sensor for sensing an engine indication indicative of a probability of making a correct assumption for the cam position the first time a firing signal is delivered.

17. The system of claim 16 wherein the sensed engine indication comprises manifold pressure.

18. The system of claim 12 wherein the assumed cam position is based on an engine position sensed when the engine was last running.